



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/777,416	02/06/2001	Hitoshi Kimura	450100-02990	6963
20999	7590	04/06/2004		
FROMMER LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151				
			EXAMINER AZARIAN, SEYED H	
			ART UNIT 2625	PAPER NUMBER

DATE MAILED: 04/06/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/777,416

Applicant(s) *mn*

KIMURA ET AL.

Examiner

Seyed Azarian

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-15,18-30 and 33-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,8-15,18-20,22-30,33-35 and 37-43 is/are rejected.
- 7) ☒ Claim(s) 7,21 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

RESPONSE TO AMENDMENT

1. Applicant's arguments, filed 1/2/2004, see page 11 through page 12, with respect to the rejection of claims 1, 4-15, 18-30 and 33-43, have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kuroki et al (U.S. patent 6,392,914).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 4-6, 8-15, 18-20, 22-30, 33-35 and 37-43, are rejected under 35 U.S.C. 102(e) as being anticipated by Kuroki et al (U.S. patent 6,392,914).

Regarding claim 1, Kuroki discloses an information storage method comprising;

a first step of inputting information to be stored to a plurality of information carrier storage means that interact with each other, including by nonlinear diffusion of information carriers (Fig. 6, column 6, lines 6-22, also column 1, lines 45-55, and column 3, lines 42-51);

a second step of autonomically and periodically reproducing representation of said information input in the first step after the representation of the information once changes with a disturbance (Fig. 7A-7B, different dynamic pattern show initial data as charge distributions).

Regarding claim 4, Kuroki discloses the information storage method according to claim 1, wherein interaction of said information carrier storage means includes dissipation of information carriers (column 3, lines 23-37, dissipating the information and interaction between the information accumulating).

Regarding claim 5, Kuroki discloses the information storage method according to claim 4, wherein said dissipation is nonlinear dissipation (column 3, lines 42-51, dissipation is nonlinear).

Regarding claim 6, Kuroki discloses the information storage method, wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation (column 2, lines 39-50, controlling diffusion and dissipation).

Regarding claim 8, Kuroki discloses the information storage method, wherein said disturbance is random addition of information carriers (Fig. 5A-5D, column 5, lines 48, information to written are given as initial data to each quantum dots at different location).

Regarding claim 9, Kuroki discloses the information storage method, wherein said disturbance is permutational addition of information carriers (column 7, lines 1-11, miniaturization of a submicron).

Regarding claim 10, Kuroki discloses the information storage method according to claim 1 wherein said disturbance is evenness of integral values of added amounts of information carriers occurring periodically (column 7, lines 12-18, tens electrons per cell).

Regarding claim 11, Kuroki discloses the information storage method according to claim 4 wherein the amount totaling a difference between the amount of said disturbance and the

amount of said dissipation does not exceed a predetermined threshold value (column 5, lines adjacent quantum dots belonging to the lower layer do not interact with each other).

Regarding claim 12, Kuroki discloses the information storage method according to claim 1 wherein the first step input information carriers expressed by n-dimension vectors (Fig. 1, column 4, lines 36-51, number of quantum dots are arranged two-dimensionally are laid one on another).

Regarding claim 13, Kuroki discloses the information storage method, wherein said second step includes a step of adding a predetermined amount of information carriers to said information carrier storage means, then having a predetermined amount of information carriers diffused between a predetermined set of said information carrier storage means, having a predetermined amount of information carriers dissipated from said information carrier storage means, and having the diffusion and the dissipation repeated until the amount of information carriers (Fig. 2, column 5, lines 24-46, where information carrier dissipated operation is repeated).

Regarding claim 14, Kuroki discloses the information storage method according to claim 12 wherein said second step includes a step of having each said information carrier storage means to diffuse information carriers to neighboring ones (column 6, lines 6-22, the interact due to the coupling between adjacent quantum dots).

Regarding claim 20, Kuroki discloses the information storage device according to claim 18 wherein reproducibility of representation of said information is controlled by adjusting the place and amount of said dissipation (column 5, lines column 24-46, the amount of dissipation by exceeding the threshold value).

Regarding claim 29, Kuroki discloses an information storage device having the function of reproducing representation of input information autonomically and periodically after the representation of the information once changes due to a disturbance, comprising: input means supplied with data expressed by n -dimensional vectors (where n is a natural number); storage means made up of n pieces of information carrier storage means for storing data input to said input means; control means for adding a predetermined amount of information carriers to data stored in said storage means, diffusing a predetermined amount of information carriers and dissipating a predetermined amount of information carriers (see claim 1 and column 2, line 61 through column 3, line 3, comparing if the number of input exceed the threshold value).

Regarding claim 30, Kuroki discloses a recording medium having recorded an information processing programs so as to have it read by a computer, comprising;

a first step of inputting information to be stored to a plurality of information carrier storage means that interact with each other, including by nonlinear diffusion of information carriers (see claim 1 and column 2, lines 39-44, outputting information).

Regarding claims 15, 18-19, recite similar limitation as claim 1 are similarly analyzed.

Regarding claims 22-23, 35, and 37-38, recite similar limitation as claims 8 and 9 are similarly analyzed.

Regarding claims 24-26 and 39-41, recite similar limitation as claims 10, 11 and 12 are similarly analyzed.

Regarding claims 27-28 and 42-43, recite similar limitation as claims 13 and 14 are similarly analyzed.

Regarding claims 33 and 34, recite similar limitation as claims 4 and 4 are similarly analyzed.

Allowable Subject Matter

3. Claims 7, 21 and 36, are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (703) 306-5907. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/777,416
Art Unit: 2625

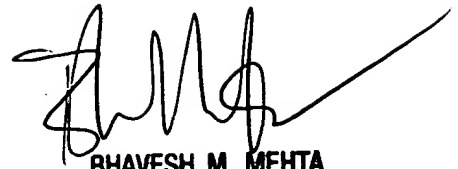
Page 7

Seyed Azarian

Patent Examiner

Group Art Unit 2625

March 23, 2004



BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800